

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

Claim 1 (currently amended): An apparatus for information extraction from electromagnetic energy via multi-characteristic spatial geometry processing, said apparatus comprising:

means for receiving electromagnetic energy from a source, the received electromagnetic energy having a plurality of spatial phase characteristics, including at least one non-polarization spatial phase characteristic;

*B*  
means for separating the plurality of spatial phase characteristics of the received electromagnetic energy;

means for identifying spatially segregated portions of each spatial phase characteristic, with each spatially segregated portion of each spatial phase characteristic corresponding to a spatially segregated portion of each of the other spatial phase characteristics in a group; and

means for quantifying each segregated portion to provide a spatial phase metric of each segregated portion for providing a data map of the spatial phase metric of each separated spatial phase characteristic.

Claim 2 (original): An apparatus as set forth in claim 1, wherein said apparatus is an imaging apparatus for providing an image of an object as the

source, and includes means for determining an imaging value associated with each group of corresponding segregated portions using the spatial phase metrics, and means for assembling an image of the object using the determined imaging values.

Claim 3 (original): An apparatus as set forth in claim 1, wherein the spatial phase characteristics of the electromagnetic energy include polarization characteristics of the electromagnetic energy.

Claim 4 (original): An apparatus as set forth in claim 1, wherein said means for providing a data map includes providing the map to indicate spatial phase change.

Claim 5 (original): An apparatus as set forth in claim 1, wherein said means for quantifying each segregated portion to provide a spatial phase metric includes associating an information value with each segregated portion.

Claim 6 (original): An apparatus as set forth in claim 1, wherein the electromagnetic energy conveying insufficient characterization in the visible and infrared spectrums to permit viable intensity-based and/or frequency-based usage.

Claim 7 (original): An apparatus as set forth in claim 1, wherein said apparatus is a single view imaging apparatus for providing an image of an object as

the source, and includes means for determining an imaging value associated with each group of corresponding segregated portions using the spatial phase metrics, and means for assembling a three dimensional image representation of the object using the determined imaging values.

Claim 8 (original): An apparatus as set forth in claim 7, wherein said means for assembling a three dimensional image representation includes means for using determined values representative of slope functions of the object.

B  
Claim 9 (original): An apparatus as set forth in claim 7, wherein said means for assembling a three dimensional image representation includes means for using determined values representative of surface shapes of the object.

Claim 10 (original): An apparatus as set forth in claim 7, wherein said means for assembling a three dimensional image representation includes means for using determined values representatives of surface contour of the object.

Claim 11 (original): An apparatus as set forth in claim 1, wherein said apparatus is an imaging apparatus for providing an image of an object as the source, and includes means for determining an imaging value associated with each group of corresponding segregated portions using the spatial phase metrics and indicative of material composition of the object associated with each group of

corresponding segregated portions, and means for assembling an image representation of the object indicative of material composition using the determined imaging values.

Claim 12 (original): An apparatus as set forth in claim 1, wherein said apparatus is an imaging apparatus for providing an image of an object obscured by an electromagnetic energy scattering media that permits a minimal amount of electromagnetic energy passage and includes means for determining imaging values from the minimal amount of electromagnetic energy.

Claim 13 (previously presented): An apparatus as set forth in claim 1, wherein said apparatus is a communication apparatus and said means for quantifying each segregated portion to provide a spatial phase metric includes determining an information value from each segregated portion.

Claim 14 (currently amended): An imaging apparatus comprising:  
means for receiving electromagnetic energy proceeding from an object, the received electromagnetic energy having a plurality of spatial phase characteristics, including at least one non-polarization spatial phase characteristic; and  
means for creating an image of the object utilizing only spatial phase characteristics of the electromagnetic energy proceeding from the object the spatial phase characteristics, including the at least one non-polarization spatial phase

characteristic, of the received electromagnetic energy.

Claim 15 (original): An apparatus as set forth in claim 14, wherein said means for receiving and said means for creating include components that do not move relative to each other.

Claim 16 (previously presented): An apparatus as set forth in claim 14, wherein the spatial phase characteristics of the electromagnetic energy include polarization characteristics of the electromagnetic energy.

B1

Claim 17 (currently amended): An imaging apparatus comprising:  
means for receiving electromagnetic energy proceeding from an object, the electromagnetic energy conveying insufficient characterization in the visible and infrared spectrums to permit viable intensity-based and/or frequency-based image creation, and the electromagnetic energy having a plurality of spatial phase characteristics including at least one non-polarization spatial phase characteristic;  
and

means for creating an image of the object utilizing spatial phase characteristics of the electromagnetic energy proceeding from the object the spatial phase characteristics, including the at least one non-polarization spatial phase characteristic, of the received electromagnetic energy.

Claim 18 (currently amended): An imaging apparatus comprising:

means for receiving electromagnetic energy from an object, the received electromagnetic energy having a plurality of polarization characteristics;

means for separating the plurality of polarization characteristics of the received electromagnetic energy;

means for creating a plurality of images, each image being created using one of the separated polarization characteristics, each image having a plurality of pixels in a matrix, with each pixel of each image being at a matrix location and each pixel corresponding to a pixel at the same matrix location of each of the other images, the corresponding matrix location pixels being in a group;

B means for quantifying a polarization metric value at each pixel of each created image;

means for determining an imaging value associated with each group of pixels using the quantified values; and

means for assembling an image using the determined values.

Claim 19 (currently amended): A method for information extraction from electromagnetic energy via multi-characteristic spatial geometry processing, said method comprising:

receiving electromagnetic energy from a source, the received electromagnetic energy having a plurality of spatial phase characteristics and includes at least one non-polarization spatial phase characteristic;

separating the plurality of spatial phase characteristics of the received electromagnetic energy;

identifying spatially segregating portions of each spatial phase characteristic, with each spatially segregated portion of each spatial phase characteristic corresponding to a spatially segregated portion of each of the other spatial phase characteristics in a group; and

quantifying each segregated portion to provide a spatial phase metric of each segregated portion for providing a data map of the spatial phase metric of each separated spatial phase characteristic.

B1

Claim 20 (original): A method as set forth in claim 19, including processing the spatial phase metrics to derive information.

Claim 21 (original): A method as set forth in claim 19, wherein said step of separating includes discerning a three-dimensional shape aspect of the ellipsoidal shape of the electromagnetic energy.

Claim 22 (original): A method as set forth in claim 19, wherein an image of an object is provided, an imaging value is determined for each group of corresponding segregated portions using the spatial phase metrics, and the image is assembled using the determined imaging values.

Claim 23 (original): A method as set forth in claim 19, wherein the spatial phase characteristics of the electromagnetic energy include polarization characteristics of the electromagnetic energy.

Claim 24 (original): A method as set forth in claim 19, wherein said step of providing a data map includes providing the map to indicate spatial phase change.

Claim 25 (original): A method as set forth in claim 19, wherein said step of quantifying each segregated portion to provide a spatial phase metric includes associating an information value with each segregated portion.

Claim 26 (previously presented): A method as set forth in claim 19, wherein said method is for communication and said step of quantifying each segregated portion to provide a spatial phase metric includes determining an information value from each segregated portion.

Claim 27 (original): A method as set forth in claim 19, including processing all spatial phase metrics to derive information.

Claim 28 (currently amended): A method of creating an image, said method comprising:

receiving electromagnetic energy proceeding from an object, the received

Appl. No. 09/621,768  
Amdt. Dated May 27, 2004  
Reply to Office action of January 30, 2004

electromagnetic energy having a plurality of spatial phase characteristics, including  
at least one non-polarization spatial phase characteristic; and

~~B /  
coinc'l~~  
creating an image of the object utilizing only spatial phase characteristics of  
the electromagnetic energy proceeding from the object the spatial phase  
characteristics, including the at least one non-polarization spatial phase  
characteristic, of the received electromagnetic energy.